



NOTE

This slide deck represents a transcription of handwritten exercise notes by numerous teams at the AREA/DMDII event in Chicago, Feb 7-8, 2018.

Blank fields in the slides are intended to represent a lack of information provided in the handwritten materials returned.

Transcription errors may have occurred.



Team: 1

Industry: Aviation

Setting: Remote design review

Scenario:

Existing structural mockup and reviewing hydraulic designs of actuators within a wing assembly

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

Traditionally used PPT, 2D, paper. Loses frame of references / miss clashes. 2D in 3D world / no concept of scale.

The scenario is essentially a story describing the activities and how the user interacts with the process.

Key pieces of information:

- Who is the user/operator?
- What is the Background and current state?
- What Choices must be made if any?
- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

The information will then be mined for our Use Case template

The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Aviation design review of wing assembly

Text:

Who: Engineers

What: Options and consequences of each option

What: Hydraulic equipment needs to be accessible

What: space constraints

What: CATIA, AR Visio, PLM

How: Remote collaboration

-> Pointing

-> Moving

-> Annotate

-> Swap options

-> Repair walkthrough

-> Animation

-> Sticky note

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Engineer team

Process Steps:

1. Porting CATIA to AR format
2. Spatially register/anchor content
3. User collaboration



Equipment:

Physical mockup. AR/VR HMDs.
Wand / haptic

Software:

Collabo/communication AR visualisation

Data Inputs:

Format conversion software
CAD
User input

Data outputs:

Visualise annotations
Visualise clashes
Visualise errors

Keywords/Classification:

Part number, data conversion, design review, 3D clash avoidance, collaboration

Derived from the Use Cases it should define the needs of the operator to be able to effectively accomplish the use case and meet all customer needs. Should define a need not necessarily call out a detailed hardware/software Requirement. That is left to the solution providers to creatively solve.

Data: Correct model format : input/output (updates)

Hardware:

HMD's, depth sensors, hi res autofocus camera

Software:

SLAM, computer vision, cloud point

System:

Hi speed / connected for remote collaboration, PLM, part database

User:

Voice and gesture interaction mechanism for menu & navigation

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

Who does it benefit and how?

Value Propositions:

Save time & money.

Minimizing design change orders

Catch errors early

Benefits company as a more efficient accurate

Maturity Model/Implementation Template

This gives a high level view and timeline for implementation of the solution. It's goal is to provide a roadmap for rapid implementation of simpler solution to provide immediate return to lay the ground work for more complex and greater value implementation in the future.

Level 0 Standalone	Level 1 Connected app		Level 2 Richer information and interaction		Level 3 Fully closed loop and smart		
Functional Description: Requirements: -Hardware -Software -Infrastructure -Process -Training Anticipated Returns:	Off the shelf Tablet Arkit None Onsite Menu instructions		HMD CAD update Annotations Remote collaboration Training on updates / annotations		Customized HMD Spatial AR app Highly connected -> PLM system -> End to end		
Year 1		Year 2					
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 8

A SIPOC can be a useful way for defining a problem/Process/System. It traces the full value chain from suppliers all the way through Customers to help identify customer/supplier needs and all inputs the process owners need to successfully deliver their product.

Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: *02 or 06*

Point of contact:

Industry:

Setting:

Scenario:

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Description of Problem/Need:

1. Customers in general, marketing teams, technical support teams and different users can benefit from our motivation case/demonstrations.
2. Authoring is a big concern.

Industry – especially complex industrial facility and equipment.

Who: Service technicians

What: Highlight AR and after service

Where: The boardroom and the shop floor

When: Any customers face their challenges and without AR involved yet

Why: We want to sell our own product and service

Convince industry of need to start adoption as point of Dig Tx strategy.

IoT drives the viability to the AR industry.

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The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

AR as an easy to implement high value capability.

Text:

Different hardware providers.

Different end users.

Different software/app developers

Foundation is end user defined requirements (SOR).

Can use different equipment and hardware and develop some software or protocol to achieve end users' specific purposes.

Baseline: we don't add extra burden for the operators by using our service.

End user requirements should define equipment and software needs but also include clear understanding of change requirements.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Process Steps:

1.



Equipment:

Partner with equipment vendors

Software:

Internal developed and ready to use software

Data Inputs:

Convert existing operations, instructions, IoT

Data outputs:

Image capture, real-time IoT data

Keywords/Classification:

AR, inexpensive, integrated data, robust security, low-bandwidth

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Data:

Hardware:

Software:

System:

User:

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Who does it benefit and how?

Value Propositions:

1. Inexpensive – off the shelf
2. Easy stages of the adoption
3. Reduce travel requirement for experts
4. Distributed knowledge base

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Functional Description: Requirements: -Hardware -Software -Infrastructure -Process -Training Anticipated Returns:	Handheld or wearable Phone/desktop / wifi Using existing IoT assets Early adoption reduces training burden		Interactive				
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 16

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Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: 3

Point of contact:

Industry: Construction

Setting: City Building Planning

Scenario: Development approval for
a new structure within a metro area

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

There is difficulty and errors in shared visual understanding and communication of designs, resulting in lost time, increased cost and poor quality within downstream processes, post-prototyping.

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Key pieces of information:

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- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

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The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Development approval for a new structure within a metro area

Text:

A real-estate developer is trying to prepare documents to present to the city board in order to receive approval for building permits. He wants to show and convey his vision of exterior design, placement in relation to other buildings and city services. And impact to pedestrian and vehicle travel.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

City Planner

Process Steps:

1. Assess outside environment (city context)
2. Toggles to city services layer
3. Toggles lighting/shadowing layer
4. Identifies problem in design and marks up visually – annotates area
5. City planner submits report of recommendation
6. Developer rebuilds model
7. Repeat

Compares to codes by pressing "Assess" button



Equipment:

AR device with geolocation and ability to work outdoors

Software:

Multi-user/networked
Annotation features
3D CAD models
Outdoor tracking models

Data Inputs:

Geolocation
City codes & ordinances
City map
Building models

Data outputs:

Variances

Keywords/Classification:

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Data:

Ability to connect to and retrieve data from city databases. Ability to extract data from building information models.

Hardware:

Ability to handle large, complex data set. Ability to function at different light levels and outdoors.

Software:

3D tracking, annotation, spatial awareness, multi-user

System:

User:

Domain expert (building codes and design)

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Who does it benefit and how?

Value Propositions:

- Reduce the time from concept to approval
- Increase chance of approval
- More holistic view

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Functional Description: Requirements: -Hardware -Software -Infrastructure -Process -Training Anticipated Returns:							
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 24

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Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: 4

Point of contact:

Industry:

Setting: Factory floor – precision
optics manufacturing

Scenario:
Machine installation

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Key pieces of information:

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- What Choices must be made if any?
- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

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The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Text:

Guidance

Recording

Validation

Traceability

Record keeping

Training handoff

During comm

After

New users

Validations

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Tech

Process Steps:

1. The user needs detailed info for calibration of equipment.
2. Select alignment app.
3. Orientation superimposed digitally for placement of equipment



Equipment:

Optic pro grinder.

Tablet AR enabled

Software:

Upskill? ScopeAR ? Custom?

Data Inputs:

Work instructions

Video, pics, CAD model

Data outputs:

Verifications, notes, audio, "as built",
time

Keywords/Classification:

In database for validation

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Data: Calibration data, IoT data

Camera, 3D CAD overlay

Hardware:

Tablet, depth map sensor, internal motion sensor unit

Software:

Custom, Upskill

System:

User:

Tech, operator

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Who does it benefit and how?

Value Propositions:

Faster, more accurate, less support needed, validation of data, better maintenance

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Functional Description: Requirements: - Tablet - Instructions - Limited data collection - Pictures Anticipated Returns:	<ul style="list-style-type: none"> - Wearable - Recording events, data - Download to records - Validation system 		<ul style="list-style-type: none"> - More interaction - Sensor-based - IoT input - Tutorial overlays 		<ul style="list-style-type: none"> - Machine learning elements - Feedback on interventions / diagnostics 		
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 32

A SIPOC can be a useful way for defining a problem/Process/System. It traces the full value chain from suppliers all the way through Customers to help identify customer/supplier needs and all inputs the process owners need to successfully deliver their product.

Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: 5

Point of contact:

Industry: Industrial equipment

Setting: Assembly line

Scenario:

Welding/brazing components

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Description of Problem/Need:

Waste was identified on an assembly line where an operator is running a brazing machine and defects are detected downstream. AR is enlisted to help this operator detect and correct issues on the machine in real time.

Who : worker

What: machine to braze

WhereL: assembly line

When: Shift work 45 second talet (sp?)time

Wht: Defects detected downstream. Need to reduce defects. Lean initiative.

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How/When?
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The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Text:

An operator is at a station on an assembly line. The operator places components into a fixture on a machine where alignment is critical for successful operation.

During the placement, a wearable device is showing intuitive instructions.

Once successfully aligned it communicates to the user to activate the machine/.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Machin Operator

Process Steps:

1. Receive parts
2. Align parts
3. Check alignment
4. Engage machine
5. Confirm completion



Equipment:

Wearable headset

Alignment sensor

Software:

App on headset with alignment capabilities

Data Inputs:

Alignment sensor

Machine completion

Data outputs:

Instructions to user

Reports on user performance data

- Timestamps

- Defect ratios

Keywords/Classification:

Assembly, alignment, computer vision, work instructions, analytics, IoT

If bad parts are made, this triggers recalibration

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Data:

Alignment data, parts inventory

Hardware:

Hands-free heads up display, IT-based alignment sensor/laser

Software:

Software platform

System:

Wireless connectivity between wearable & sensor

User:

Lightweight, comfortable, long battery life, not too hot, eyeglass friendly

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Who does it benefit and how?

Value Propositions:

Increased throughput – reduces alignment time.

Reduce defects, material loss

Possible worker safety improvement

For companies looking to increase throughput, reduce defects and eliminate material loss, the ALIGN system assists workers in making each part better than the last

Augmented

Laser line

Indicator Integrated

Guidance

Network

Maturity Model/Implementation Template

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Functional Description: Just show image of correct alignment. Anticipated Returns:	Sensor integrated for red/green indication.		Tailoring contextual & dynamic feedback to user needs.				
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 40

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Suppliers	Inputs	Process	Outputs	Customers
ALIGN inc Wearable HW Inc Machine Vision Inc	Alignment specs User feedback			
Requirement/Needs				





Team: 7

Industry: Machine manufacturing

Setting: Commercial office

Scenario:

Fault notification is issued requiring service technician.

Technician determines paper jam could have been caused by multiple causes. Troubleshooting is necessary.

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

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The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Troubleshoot Xerox machine

Text:

Determine cause of fault and perform necessary procedure utilizing AR technology. User would be service technician. The background of the system is within a complicated mechanical with small and precise components.

Determine what tech manuals need to be referenced. Maintenance device connects to printer to determine fault codes and frequency. Technician interacts by wearing a head mounted display. They would then scan a barcode that would then pull up the initial work order for the machine.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Technician

Process Steps:

1. Identify device
2. Troubleshoot
3. Perform maintenance procedure
4. Verification of work performed



Equipment: Diagnostic tool

Head wearable AR device

Software:

AR software, AI software

Data Inputs:

Machine bar code, fault ID database

Data outputs:

Recommended troubleshooting step.

Parts inventory

Keywords/Classification:

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Data: Manuals, fault tree, parts list, 3D models, experts

Hardware: head-wearable, printer interface systems, parts ordering system

Software: AR tracking software, remote AR

System: Xerox infrastructure, inventory system, support team, telemetry & R&D (analytics)

User: Technician

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

Who does it benefit and how?

Value Propositions:

Reduced time taken for repair. Quicker turnaround for successful completion.

This would benefit both the customer and company.

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Functional Description: PDF document Requirements: Anticipated Returns:	Laptop connects device and performs fault analysis.				1) Telephone call with fault code. 2) 2. Connected device and real-time IoT data		
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 48

A SIPOC can be a useful way for defining a problem/Process/System. It traces the full value chain from suppliers all the way through Customers to help identify customer/supplier needs and all inputs the process owners need to successfully deliver their product.

Suppliers	Inputs	Process	Outputs	Customers
<ul style="list-style-type: none"> - Auto inventory - Auto pack of SHID 	<ul style="list-style-type: none"> - Maintenance history log 	<ul style="list-style-type: none"> - Operational check-up 	<ul style="list-style-type: none"> - Working machine - Parts orders 	<ul style="list-style-type: none"> - Faster turnaround - Lower hourly cost (cumulative)
Requirement/Needs				
<ul style="list-style-type: none"> - Cloud database 	<ul style="list-style-type: none"> - Communication device - Database 	<ul style="list-style-type: none"> - Check-up procedure 	<ul style="list-style-type: none"> - Inventory management system 	<ul style="list-style-type: none"> - Customer service org





Team: 08

Point of contact:

Industry:

Setting:

Scenario:

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

Lack of digestible info on complex products need effective ways to global customer base for training / product qualification.

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Key pieces of information:

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How/When?
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The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

New product training - customer

Text:

Airline service mechanics in the field need to be provided with AR-supported Illustrated Parts Catalogue (IPC) and Aircraft Maintenance Manual (AMM) relevant to maintenance certification.

AR-based training material educating service people on the new product.

Introduction of new capabilities procedure by tablet or wearable.

Multiple people required to join the same session.

3D overlay + step by step instructions.

Animations annotated.

Remote collaboration enabled.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Service Technician.

Service instructor/Trainer

Process Steps:

1. Code scan on equipment to start training procedure
2. Trainee guided through step-based training
3. Test based on training material
4. Virtual celebration or restart



Equipment:

Wearable (HMD), tablet

Software:

Training app applicable to different hardware

Data Inputs:

IPC, AMM, simulation data (refer to scenario)

Data outputs:

Pass/ fail

User-specific logging

Keywords/Classification:

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Data:

Hardware:

Software:

System:

User:

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Who does it benefit and how?

Value Propositions:

Maturity Model/Implementation Template

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Functional Description: Requirements: -Hardware -Software -Infrastructure -Process -Training Anticipated Returns:	Centralised product/training info Virtual class						
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 56

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Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: 09

Industry: Factory Automation

Setting: New equipment
commission

Scenario:

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Description of Problem/Need:

Multi-vendors need to commission their machines to interact with each other with optimal settings to maximise yield and quality.

Multi-system vendors of system, interactions between machines. Not working together, on site.

Right first time commissioning of multi-vendor system

Multi-vendor – Ensure integration of filter, conveyor valve

Validation

AR to physical integrate tuning

Image recognition and control of seeing

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The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

System component.

Tuning.

Looking at each component.

Setting, IoT feed input into machine learning to correctly tuning adjustment.

Data interoperability & API

Interoperability for data interface.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Engineer team

Use cases:

- Installation and verification
- Integration and validation
- End user validation & training

- System integrator
 - Vendor installation



Equipment:

- Standard

Software:

- Visual recognition to obtain data from machine
- AR
- Wifi on-site to obtain data

Data Inputs:

Data outputs:

Keywords/Classification:

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Data:

Hardware:

Software:

System:

User:

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Who does it benefit and how?

Value Propositions:

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Level 0 Standalone	Level 1 Connected app		Level 2 Richer information and interaction		Level 3 Fully closed loop and smart		
Functional Description: Requirements: -Hardware -Software -Infrastructure -Process -Training Anticipated Returns:							
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 64

A SIPOC can be a useful way for defining a problem/Process/System. It traces the full value chain from suppliers all the way through Customers to help identify customer/supplier needs and all inputs the process owners need to successfully deliver their product.

Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: 10

Industry:

Setting:

Scenario:

Furnace repair

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

- Furnace isn't working at home. It is not good to call a repair person.
- Lack of information on diagnostics and repair (lack of skill)
- Is it time to escalate or not?

The scenario is essentially a story describing the activities and how the user interacts with the process.

Key pieces of information:

- Who is the user/operator?
- What is the Background and current state?
- What Choices must be made if any?
- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

The information will then be mined for our Use Case template

The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Furnace scenario

Text:

User – Average person

Furnace in need of repair

- you'd HAVE to call a repair man

Choices:

- Call a repair guy
- Try on your own

Hardware/software

- Furnace & tools
- Phone, tablet or HMD
- Diagnostic info
- Instructions

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Average person

Process Steps:

1. Recognize failure
2. Initial diagnostic steps
3. Determine escalation (QR code?)
 - Provide service contacts
 - Push diagnostic data to service contacts



Equipment:

Smartphone, tablet, HMD

Software:

Decision tree

Access to important information

Data Inputs:

Make & model

Barcode reader

Error codes

Data outputs:

- Step by step guide
- Diagnostic info
- Permit req
- Contact guide
- Warnings/alerts

Keywords/Classification:

Derived from the Use Cases it should define the needs of the operator to be able to effectively accomplish the use case and meet all customer needs. Should define a need not necessarily call out a detailed hardware/software Requirement. That is left to the solution providers to creatively solve.

Data:

Hardware:

Software:

System:

User:

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

Who does it benefit and how?

Value Propositions:

Faster response times

Fewer errors

Improved safety

No need to travel

Earlier awareness

Peace of mind

Help more customers

Happier customer

Reduce cost

Maturity Model/Implementation Template

This gives a high level view and timeline for implementation of the solution. It's goal is to provide a roadmap for rapid implementation of simpler solution to provide immediate return to lay the ground work for more complex and greater value implementation in the future.

Level 0 Standalone	Level 1 Connected app	Level 2 Richer information and interaction	Level 3 Fully closed loop and smart
<p>Functional Description: Repair aid</p> <p>Requirements:</p> <ul style="list-style-type: none"> -Hardware : smart device -Software : dedicated app -Infrastructure : N/A -Process : Load & run app -Training: Walk through survey/questionnaire <p>Anticipated Returns:</p> <p>Complete repairs</p>	<p>Natural language interface</p> <p>Internet connection</p> <p>Connect to expert</p> <p>Service contacts</p>	<p>Predict product performance</p>	<p>Predicts and corrects problems</p> <p>Recognize or predict a failure</p> <p>Orders parts needed ahead of time</p> <p>Has parts delivered before failure</p>
<p>Year 1</p>			
1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
<p>Year 2</p>			
1st Qtr	2nd Qtr	3rd Qtr	4th Qtr 72

A SIPOC can be a useful way for defining a problem/Process/System. It traces the full value chain from suppliers all the way through Customers to help identify customer/supplier needs and all inputs the process owners need to successfully deliver their product.

Suppliers	Inputs	Process	Outputs	Customers
Manufacturer	Make & model Diagnostic info	Repair procedures (furnace)	Correct repair steps Needed parts Technician contacts	
Requirement/Needs				
		Not knowing what to do Knowledge on certifications		





Team: 11

Industry: Manufacturing

Setting: Hand assembly

Scenario:
Manufacturing assembly task

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

Cabling – routing wall to box, 2 different technicians

Part identification

Quality verification

Work instructions

Operator/inspector/engineer

Plans : materials and people

Real time

Rework process

Training tool

Aggregate info

Move from AR to VR then back “old a part”

Camera good build/bad build

Ability to see exactly where process went wrong

Eliminate tribal knowledge

Right first time

Can you get to specifics (80% of this cable installed wrong)

Measurement to evaluate standards

Interactive planning

Segregation of duties

The scenario is essentially a story describing the activities and how the user interacts with the process.

Key pieces of information:

- Who is the user/operator?
- What is the Background and current state?
- What Choices must be made if any?
- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

The information will then be mined for our Use Case template

The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Manufacturing quality

Text:

Operator arrives at station

Not consistent order of operations

Part identification

None distributed work

Non consistent issue resolution

No clear rework process/reactive v proactive

Work instructions may not match current environment

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Assembly technician

Process Steps:

1. Technician selects required procedure
2. Verify parts for step
3. Tech reads 2D work instruction
4. Performs work instruction (harness)
5. Verify completion
6. Inspection -> quality buy off



Equipment:

Shop floor computer, tablet,
handheld

Software:

MES, planning, design

Data Inputs:

Purchase order, buy off, BOM,
verifications, knowledge
transfer(data)

Data outputs:

Buy off, efficiency measurements

Keywords/Classification:

Derived from the Use Cases it should define the needs of the operator to be able to effectively accomplish the use case and meet all customer needs. Should define a need not necessarily call out a detailed hardware/software Requirement. That is left to the solution providers to creatively solve.

Data: Ability to read/view:

Purchase order, part number (BOM), requirements of build (temp, external factors, internal factors, hardware, connectivity)

Hardware:

Ability to process data quickly, implement of hard stop, ability to use / manoeuvre 3D CAD model, withstand drops/harsh environment, low cost, battery life

Software:

Ability to process data quickly, connected tooling/inter systems (i.e. recognition of correct tools to steps)

System:

Ability to interconnect all steps, systems and tools

User:

Ability: multi-lingual, swapable hardware, intuitive for use, annotation/interaction with work instruction, intuitive authoring platform, real time view of builds

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

Who does it benefit and how?

Value Propositions:

Maturity Model/Implementation Template

This gives a high level view and timeline for implementation of the solution. It's goal is to provide a roadmap for rapid implementation of simpler solution to provide immediate return to lay the ground work for more complex and greater value implementation in the future.

Level 0 Standalone	Level 1 Connected app		Level 2 Richer information and interaction		Level 3 Fully closed loop and smart		
Functional Description: Requirements: -Hardware -Software -Infrastructure -Process -Training Anticipated Returns:							
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 80

A SIPOC can be a useful way for defining a problem/Process/System. It traces the full value chain from suppliers all the way through Customers to help identify customer/supplier needs and all inputs the process owners need to successfully deliver their product.

Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: 12

Point of contact:

Industry:

Setting:

Scenario: Assembly assistance

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

- An assembly line worker arrives at a major automotive manufacturer that has retooled the line for a new product. This has introduced new manufacturing processes, quality assurance inspection procedures, and new tools.
- The objective is to hit a certain set of product throughput with quality metrics.
- Using an augmented reality system, the worker is able to access step by step task guidance of the new assembly process that has been created for this new product. Line workers are working with production parts on the line as a part of the line ramp-up process.
- The worker is also presented with information related to their individual and line-level takt time to ensure that the desired productivity metrics are being met on the AR device.
- When an andon alert occurs, the line supervisor can determine using streaming video and audio from the affected station and resolve issues on the fly. If the issue cannot be resolved, the right person can be dispatched to the station.
- Line workers are able to close the loop with design and process engineering by providing feedback from their stations to share insights to improve the process. Live sessions are also possible with the engineering team to enhance this knowledge capture and sharing.
- Line workers are also trained to use smart tools that capture certain metrics, such as torque readings from a Bluetooth enabled torque wrench.
- Once the technician reaches the desired rate of productivity and quality, the AR application is re-configured and hardened to be used in an everyday assembly task.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

Step by step task guidance

- A user requires detailed assistance to perform an operation.
- The worker is presented with a set of work instructions that are enhanced by videos of the procedure being performed by an expert.
- Depending on the process, additional 2D reference materials such as PowerPoint presentations, data from Excel spreadsheets, and/or PDF manuals will be available to the user.
- The AR device can also provide access to 3D models from the engineering design process that is overlaid on top of the parts and tools that the worker is using.
- The worker can use voice, gesture, buttons, and/or sensor-driven interactions to navigate the user interface.
- If needed, a livestreaming session with the remote expert to get guidance on how to complete a particular task.

Derived from the Use Cases it should define the needs of the operator to be able to effectively accomplish the use case and meet all customer needs. Should define a need not necessarily call out a detailed hardware/software Requirement. That is left to the solution providers to creatively solve.

Step by step task guidance

- A user requires detailed assistance to perform an operation.
- The worker is presented with a set of work instructions that are enhanced by videos of the procedure being performed by an expert.
- Depending on the process, additional 2D reference materials such as PowerPoint presentations, data from Excel spreadsheets, and/or PDF manuals will be available to the user.
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- The worker can use voice, gesture, buttons, and/or sensor-driven interactions to navigate the user interface.
- If needed, a livestreaming session with the remote expert to get guidance on how to complete a particular task.

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

Who does it benefit and how?

Value Propositions:

Maturity Model/Implementation Template

This gives a high level view and timeline for implementation of the solution. It's goal is to provide a roadmap for rapid implementation of simpler solution to provide immediate return to lay the ground work for more complex and greater value implementation in the future.

Level 0 Standalone		Level 1 Connected app		Level 2 Closing the loop with engineering		Level 3 Fully immersive and tracked	
<p>Functional description: sharing text-based work instructions with photos and videos</p> <p>Requirements:</p> <ul style="list-style-type: none"> Hands-free device Software with integrations to the process management systems (e.g. MES and andon alert systems) Availability of connectivity and endpoint security Process engineers bought into equipping the line workers with AR Workers trained to use the AR system <p>Anticipated returns:</p> <ul style="list-style-type: none"> Shortened workforce ramp time 3 months to achieve (assuming infrastructure is ready) 		<p>Functional description:</p> <ul style="list-style-type: none"> Task guidance with photos, videos, and live streaming with connections to the MES Connections with non-immersive content systems <p>Requirements:</p> <ul style="list-style-type: none"> Level 0, plus the ability to connect to content management systems and MES to display takt time 		<p>Information going back to the process engineers – metadata related to work as well as photos/videos/quality metrics being made available to the users</p>		<p>Full connection to the PLM – 2D/3D engineering and process changes are propagated to the workers dynamically</p> <p>Quality is being tracked by onboard sensors at the line and issues are caught before final inspection</p> <p>Smart tools and data from the line is feeding into real-time manufacturing execution systems and reconfiguring station-level takt times as necessary</p>	
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 88

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Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: 13

Industry: Shipbuilding &
maintenance

Setting: Standard maintenance

Scenario: Engine room (ship)

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

Need to perform maintenance of operational military ship enclosed engine room. High turnover of technicians/junior workforce.

Who: Maintenance technician

When: Operator has maintenance indicator/system failure indicated

Why: Mission requirement / military ops

The scenario is essentially a story describing the activities and how the user interacts with the process.

Key pieces of information:

- Who is the user/operator?
- What is the Background and current state?
- What Choices must be made if any?
- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

The information will then be mined for our Use Case template

The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Operator maintenance task

Text:

An inexperienced operator is capable of performing simple tasks that are performed frequently but needs additional assistance for maintenance that is performed infrequently.

AR is used for the more complex, less frequent maintenance tasks. When complex issues arise, the operator uses remote assistance to aid in performing the task.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

New, low skilled entry level maintenance technician + engineer (remote support)

Process Steps:

1. Logon to orient device to equipment (engine)
2. Select maintenance task to perform
3. Perform maintenance tasks
4. Record key steps (i.e. torques)
5. Task signoff / completion
6. Document key analytics



Equipment:

Device (wifi capable)

Software:

Routine task-based software with remote support / assist capabilities with digital toolkit available

Data Inputs:

Engineering work instruction (authored maintenance content)

Data outputs:

Completion of maintenance including key analytics

Keywords/Classification:

Maintenance

Derived from the Use Cases it should define the needs of the operator to be able to effectively accomplish the use case and meet all customer needs. Should define a need not necessarily call out a detailed hardware/software Requirement. That is left to the solution providers to creatively solve.

Data: Data storage on device

Hardware:

Inclusive to all devices, network

Software:

Off-line/on-line, record key data, network

System:

IoT, secure equipment

User:

Remote assistance / user friendly

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

Who does it benefit and how?

Value Propositions:

Increase in consistency, quality and decrease length of time to perform the task. This will reduce the risk of future breakdowns.

Documentation of maintenance performed and key parameters.

Reduce training times

Maturity Model/Implementation Template

This gives a high level view and timeline for implementation of the solution. It's goal is to provide a roadmap for rapid implementation of simpler solution to provide immediate return to lay the ground work for more complex and greater value implementation in the future.

Level 0 Standalone	Level 1 Connected app		Level 2 Richer information and interaction		Level 3 Fully closed loop and smart		
Functional Description: Requirements: -Hardware -Software -Infrastructure -Process -Training Anticipated Returns:							
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 96

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Suppliers	Inputs	Process	Outputs	Customers
Engineers	Engineering work instructions Authored AR content	Ensure maintenance	Completed maintenance tasks and document tasks completed	Management Equipment owner
Requirement/Needs				
	AR device		Completed maintenance tasks	





Team: 14

Industry: Aerospace

Setting: Inspection of landing gear

Scenario:

On-site inspection task

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

Landing gear is a critical component and requires inspection by LM at suppliers before bringing landing gear into factory.

Problem: Requires travel to supplier site for a short duration inspection.

The scenario is essentially a story describing the activities and how the user interacts with the process.

Key pieces of information:

- Who is the user/operator?
- What is the Background and current state?
- What Choices must be made if any?
- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

The information will then be mined for our Use Case template

The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Collaborative landing gear inspection

Text:

- A supplier plan representative will arrange time and schedule the inspection with Lockheed quality team
- During the inspection, the supplier plan representative will use their wearable AR device and connect to Lockheed's collaborate inspection software with inspection checklist
- The supplier representative will follow the inspection steps while Lockheed watches and records the inspection
- If there are issues, then the team works through the issues collaboratively
- Once complete, they perform digital sign-off

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

Supplier Plan Representative

Process Steps:

1. Arrange time with Lockheed Martin (LM) and start remote telepresence
2. Begin inspection template
3. Capture result of inspection steps with signoff images if needed
4. Generate final report / signoff



Equipment:

Wearable AR device

Internet at inspection location

Software:

Remote telepresence to wearable with inspection

Data Inputs:

Work order to inspect

Inspection list

Data outputs:

Inspection results (digital images and notes)

Keywords/Classification:

Collaborative inspection

Derived from the Use Cases it should define the needs of the operator to be able to effectively accomplish the use case and meet all customer needs. Should define a need not necessarily call out a detailed hardware/software Requirement. That is left to the solution providers to creatively solve.

Data:

Step by step inspection instructions

Hardware:

Wearable device

Software:

Remote telepresence to wearable with inspection checklist

System:

Lockheed QA system

User:

Supplier plan rep with Lockheed Remote Expert

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

Who does it benefit and how?

Value Propositions:

- Reduced Travel cost
- Reduced Labor cost (doing other)
- Reduced Inventory cost (supplier)
- Documented QA process
- Traceability
- Future machine learning to aid via images

Maturity Model/Implementation Template

This gives a high level view and timeline for implementation of the solution. It's goal is to provide a roadmap for rapid implementation of simpler solution to provide immediate return to lay the ground work for more complex and greater value implementation in the future.

Level 0 Standalone	Level 1 Connected app	Level 2 Richer information and interaction	Level 3 Fully closed loop and smart				
<p>Paper inspection with pictures and printed reports.</p> <p>Anticipated Returns: Quality / safety</p>	<p>Digitized report created by supplier via phone/tablet</p> <p>Feedback between supplier and Lockheed Martin</p>	<p>"Our solution"</p>	<p>Give instructions to supplier</p> <p>Check in real time via artificial intelligence</p>				
<p style="text-align: center;">Year 1 Year 2</p>							
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr104

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Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: 15

Industry: Telecommunications

Setting: Field technician

Scenario:

Dealing with outliers due to aging workforce and tribal knowledge.

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

1. Aging workforce – tribal knowledge
2. Documentation is not accurate
3. “Individually invented” solution
 1. Old equipment – undocumented
4. In ability to document new work processes
 1. (knowledge dissemination & transfer)

The scenario is essentially a story describing the activities and how the user interacts with the process.

Key pieces of information:

- Who is the user/operator?
- What is the Background and current state?
- What Choices must be made if any?
- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

The information will then be mined for our Use Case template

The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title:

Documenting outlier procedures

Text:

Field technician encounters an outlier situation. It is not documented and needs to be resolved. Currently field technician may be able to solve but it is not practical to capture and transfer this knowledge .

Currently field tech reps use tablet and phones to make notes on the solutions.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):
Field Tech Rep

Process Steps:

1. Encounter outlier issue (undocumented)
2. Diagnose situation
3. Developers workaround
4. Implements solution
5. Capture new process step
6. Initiate write-back to the central database



Equipment:

Handheld/headmounted

Software:

Proprietary database – partly ???

Data Inputs:

Flag the need to document the process

Data outputs:

New process

Keywords/Classification:

Field technician

Outlier

Process

Documentation

Success metric

How-to

Product category

Derived from the Use Cases it should define the needs of the operator to be able to effectively accomplish the use case and meet all customer needs. Should define a need not necessarily call out a detailed hardware/software Requirement. That is left to the solution providers to creatively solve.

Data: Location, work order, customer, product / equipment

Hardware:

Handsfree/HMD, storage, connectivity, endless battery life, display

Software:

Image recognition 2D/3D, voice and gesture interface, read/write

System:

User:

Field tech rep, creators

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

Who does it benefit and how?

Value Propositions:

Reduce 2nd calls

Lowered training efforts

Boosts field rep confidence

Customer satisfaction

Maturity Model/Implementation Template

This gives a high level view and timeline for implementation of the solution. It's goal is to provide a roadmap for rapid implementation of simpler solution to provide immediate return to lay the ground work for more complex and greater value implementation in the future.

Level 0 Standalone	Level 1 Connected app		Level 2 Richer information and interaction		Level 3 Fully closed loop and smart		
Functional Description: Requirements: -Hardware - tablet Anticipated Returns:	HMD		HMD + connectivity LTE		3D mapping		
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr 12

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Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				





Team: 16

Industry: Construction

Setting: Installation/repair

Scenario:

Operator discovers a conflict between installation and design. Requires engineering support to resolve.

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

In the construction environment, on-site workers often encounter installation conflicts that require engineering support to solve. Time is critical because construction is stopped and means are required to evaluate multiple potential solutions. Virtual prototyping and AR could avoid costly trial and error approaches.

The scenario is essentially a story describing the activities and how the user interacts with the process.

Key pieces of information:

- Who is the user/operator?
- What is the Background and current state?
- What Choices must be made if any?
- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

The information will then be mined for our Use Case template

The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title: Engineering virtual prototyping

Text:

Construction industry tradesperson encounters installation interference that resulted from a design change. The current solution process requires trial and error approach using physical mockups / prototypes. The industry want to use virtual prototyping and AR to evaluate multiple potential solutions to avoid costly physical prototyping and accelerate the solution process.

CAD tools for virtual prototyping and AR visualization hardware and software would be chosen. Hardware tools must be suitable for use by on-site workers.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s):

- 1) Engineering designers (virtual prototyping)
- 2) Installation crews – AR to evaluate solutions

Process Steps:

1. Installer identifies conflict
2. Installer capture images to describe issue and transmits to engineering.
3. Engineering develops potential solutions using virtual prototyping methods
4. Installer evaluates potential solutions using AR to validate fit and function and select most efficient solution
5. Installer captures as-built condition to feed back to product model/design



Equipment:

- Scanner / camera
- CAD / prototyping tool (3D modelling)
- AR visualization hardware

Software:

- CAD/ 3D modelling
- Visualization software
- Remote assistance tool for real-time interaction

Data Inputs:

- Original 3D design
- On-site conditions (visual, audio...)

Data outputs:

- 3D virtual prototype solutions
- As-installed result/design

Keywords/Classification:

- Virtual prototype
- Conflict resolution
- Visualization tool

Derived from the Use Cases it should define the needs of the operator to be able to effectively accomplish the use case and meet all customer needs. Should define a need not necessarily call out a detailed hardware/software Requirement. That is left to the solution providers to creatively solve.

Data:

Hardware:

Ruggedized tablet suitable for use in an industrial environment

Software:

Real time remote video transmission, location logging, enterprise secure user authentication

System:

Small and portable, long battery life, hands free, always connected

User:

Easy to use, limited learning required

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

Who does it benefit and how?

Value Propositions:

Improve overall efficiency of the construction process by:

1. Enabling rapid problem identification and solution process
2. Minimizing stop work durations
3. Avoiding costly trial and error cycles that use physical prototypes
4. Avoiding multiple process cycles by sharing accurate and complete problem descriptions and values

Maturity Model/Implementation Template

This gives a high level view and timeline for implementation of the solution. It's goal is to provide a roadmap for rapid implementation of simpler solution to provide immediate return to lay the ground work for more complex and greater value implementation in the future.

Level 0 Standalone	Level 1 Connected app		Level 2 Richer information and interaction		Level 3 Fully closed loop and smart		
Functional Description: Still photos Drawings (solutions) Sneaker net Anticipated Returns:	Phone conversations 3D CAD solutions Wifi connected		Scan data Virtual prototypes (multiple)		Design feedback; as-built to base design		
Year 1				Year 2			
1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	1st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr120

A SIPOC can be a useful way for defining a problem/Process/System. It traces the full value chain from suppliers all the way through Customers to help identify customer/supplier needs and all inputs the process owners need to successfully deliver their product.

Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				



The background of the slide is a teal-colored image. On the left side, there is a close-up, semi-transparent view of a mechanical watch movement, showing gears and a rotor. On the right side, there is a faint, semi-transparent profile of a person's face, looking towards the left.

Team: 17

Point of contact:

Industry: Any discrete
manufacturing

Setting:
Engineering/Development

Scenario: Design review

This statement defines the need/problem in a clear concise and Precise manner. It defines the scope of the issue and should also include the 5 W's(who, what, where, when, why). Should only be a couple of sentences long and not provide the solution.

Description of Problem/Need:

Review the detailed design to ensure that the design implementation has met the requirements. All lifecycle stakeholders – designers, engineers, mfg, customer/user, logistics. Held early in the lifecycle in a collaborative manner.

Why AR? Size/scale of design. Good comparison to real life model. Interactive capabilities. Real time modification impacts. Real time analysis of design. Form/fit/function.

Eng design review -> immersive eng design review

The scenario is essentially a story describing the activities and how the user interacts with the process.

Key pieces of information:

- Who is the user/operator?
- What is the Background and current state?
- What Choices must be made if any?
- What equipment, software, etc is being used?
How/When?
- How is the operator interacting with the experience?

The information will then be mined for our Use Case template

The scenario should provide a complete solution to the problem/Needs Statement

Scenario Title: Design review procedure

Text:

Designers/engineers/program mgr.

All review the design package. Design revisions as needed.

CAD/CAM/PLM/tablet/headsets.

Using the model to ensure design is complete.

Remote assistance/collaboration enabler.

Navigate around the model, check form, fit, function.

Modify as necessary. ECPs.

The Use Case Template is derived from the Scenario. It organizes the scenario into useful segments of information

User(s): Designers/Engineers

Process Steps:

1. Convene the participants
2. Bring in design / load the design
3. Position the design in review space
4. Conduct review
5. Modify/markup model as necessary
6. Check measurements/tolerances
7. Check for producibility
8. Check for maintainability



Equipment:

The digital enterprise system. Wearables, tablets, mobile devices.

Software: PLM. Visualisation sw.

Data Inputs: Design/CAD model.
Requirements. Environments.

Data outputs: Reviewed desing with
markups

Keywords/Classification: Design

Derived from the Use Cases it should define the needs of the operator to be able to effectively accomplish the use case and meet all customer needs. Should define a need not necessarily call out a detailed hardware/software Requirement. That is left to the solution providers to creatively solve.

Data:

Hardware:

Software:

SEE PREVIOUS CHART

System:

User:

This statement describes how the solution will benefit the various customers/stakeholders. Remember there are benefits beyond just dollars: quality, time, ergonomics, worker satisfaction, data visibility and richness of data gathered, etc.

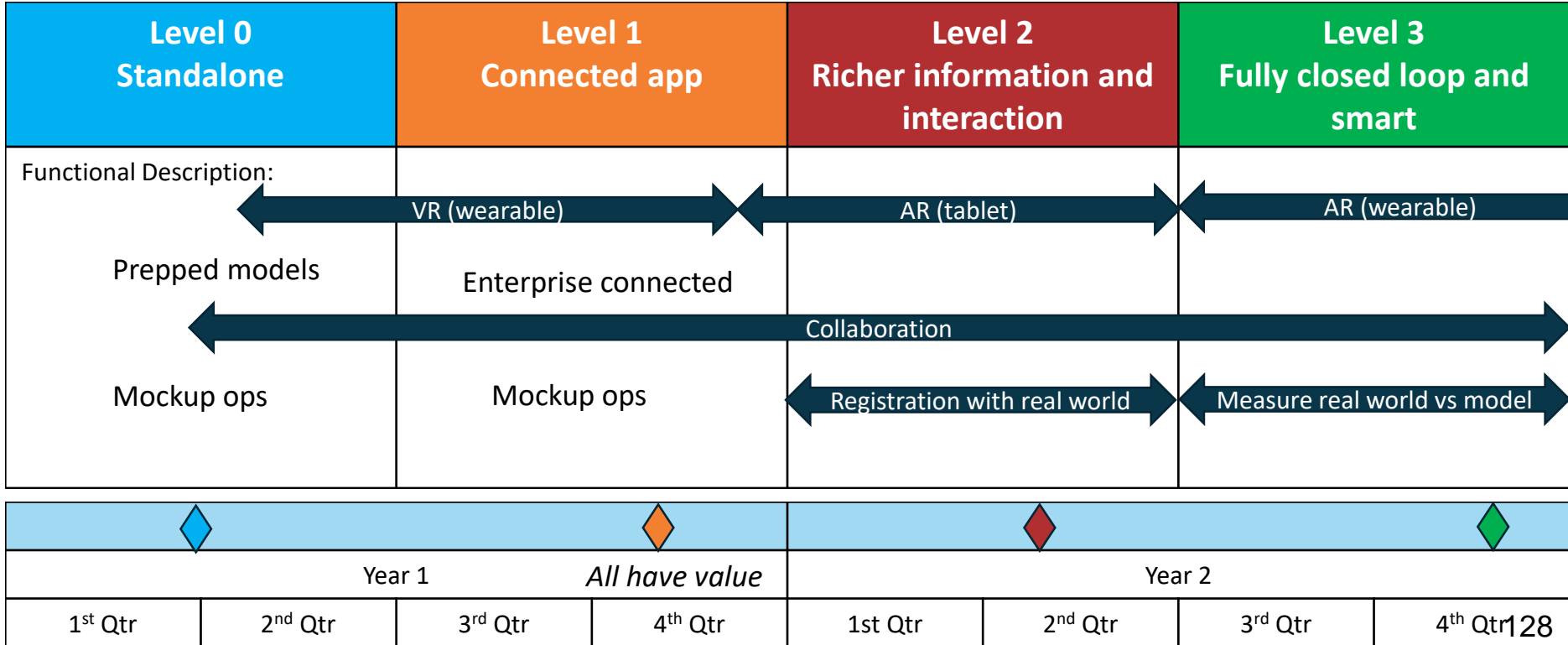
Who does it benefit and how?

Value Propositions:

Better design. Less costly and less time from concept to design. Less design meetings. Ensures requirements are met early in life cycle.

Maturity Model/Implementation Template

This gives a high level view and timeline for implementation of the solution. It's goal is to provide a roadmap for rapid implementation of simpler solution to provide immediate return to lay the ground work for more complex and greater value implementation in the future.



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Suppliers	Inputs	Process	Outputs	Customers
Requirement/Needs				

